

APRIL
2014

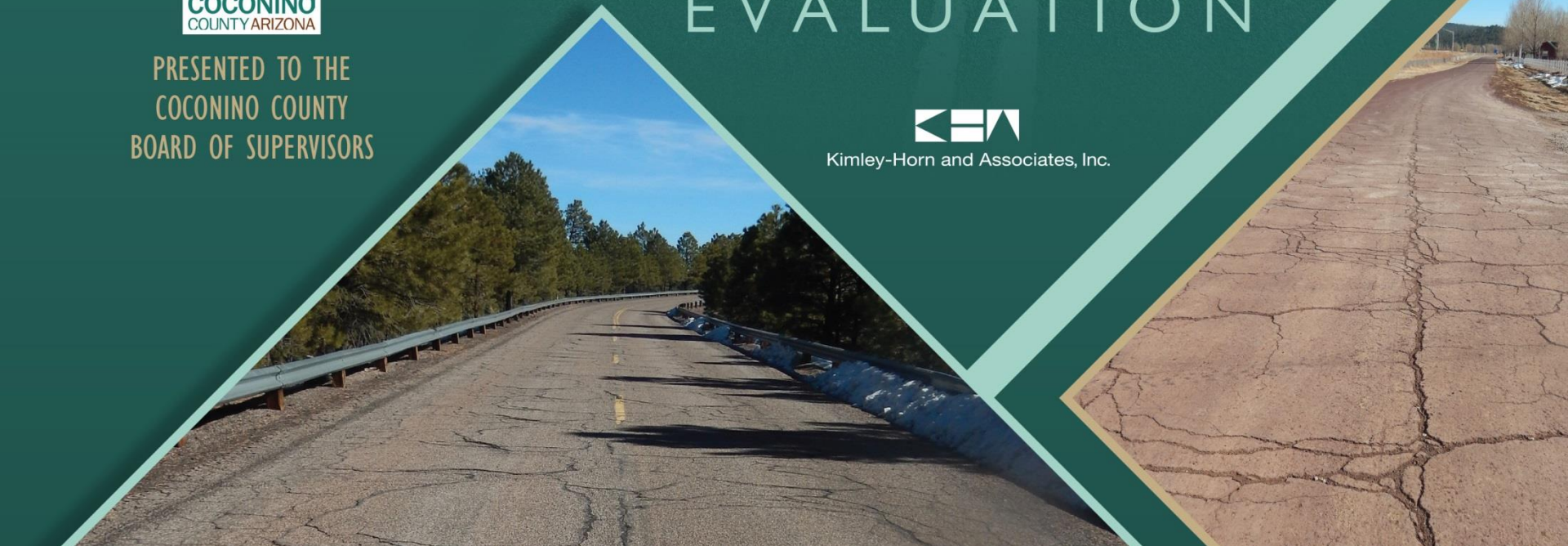


PRESENTED TO THE
COCONINO COUNTY
BOARD OF SUPERVISORS

Coconino County Pavement EVALUATION



Kimley-Horn and Associates, Inc.





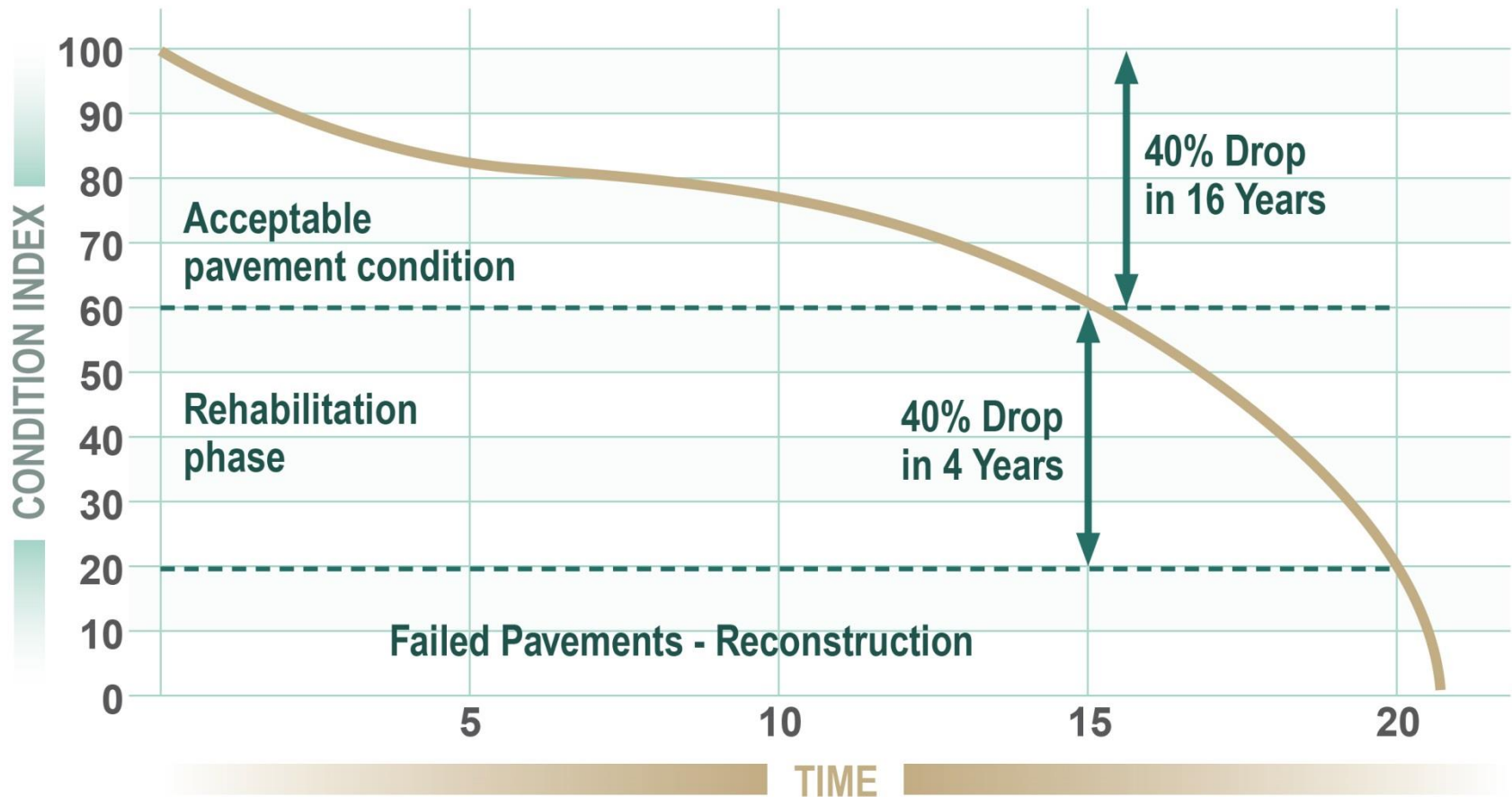
▲ WHAT IS PAVEMENT MANAGEMENT?

- ▶ Pavement management is a systematic approach to managing pavements that is repeatable and reliable over time.
- ▶ County staff makes frequent decisions about the timing and type of maintenance and rehabilitation activities that should be completed to maintain an acceptable surface operational condition and adequate load-carrying capacity.
- ▶ To In order to accomplish this they must understand the current condition of the pavement.





PAVEMENT DETERIORATION CURVE



Area Pavements



Good



Lake Mary Rd - Good



Fair



Lake Mary Rd - Fair





Area Pavements



Blue Ridge - Fair



Poor



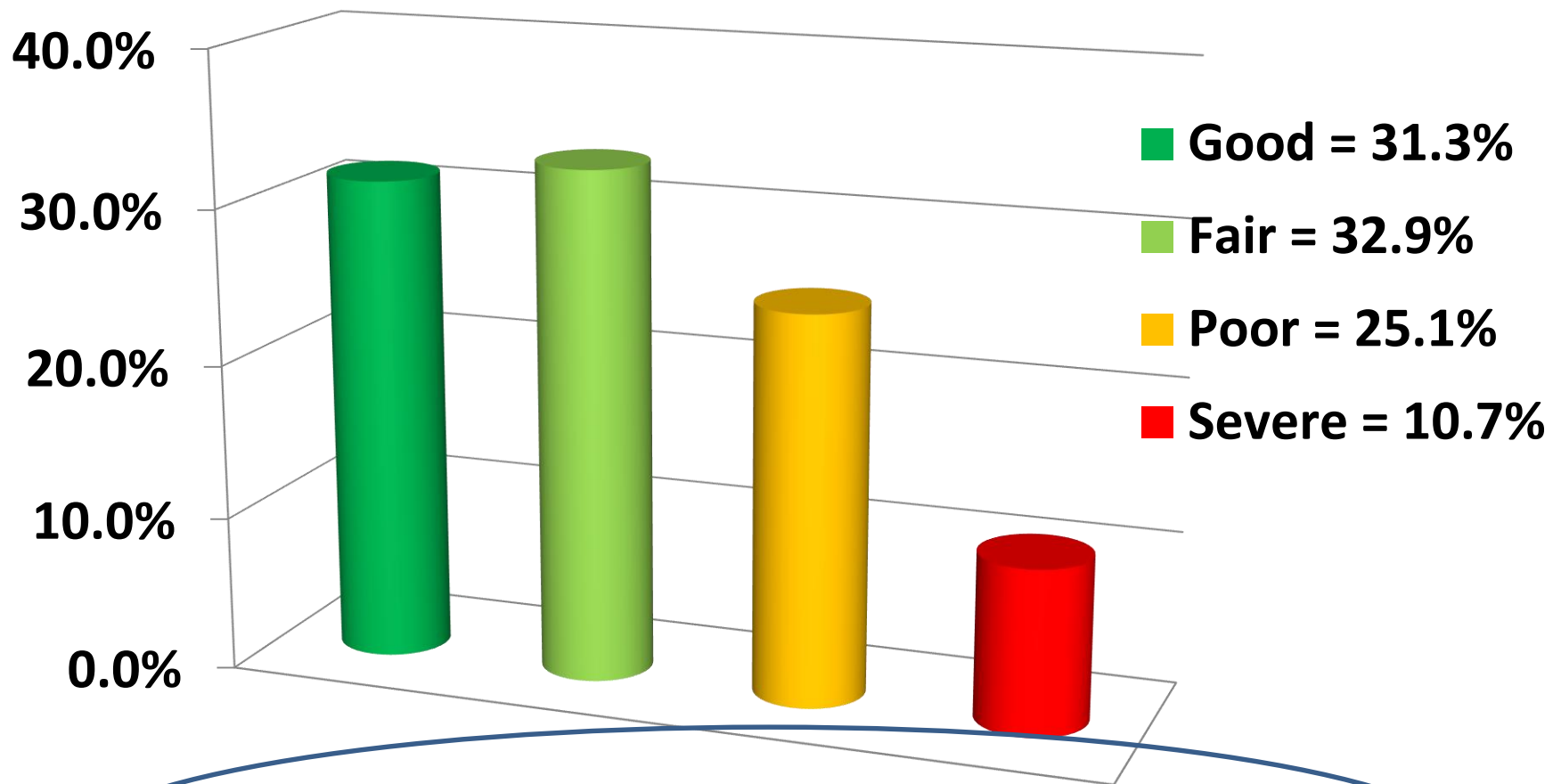
Perkinsville Rd - Severe



Severe



Current Pavement Condition

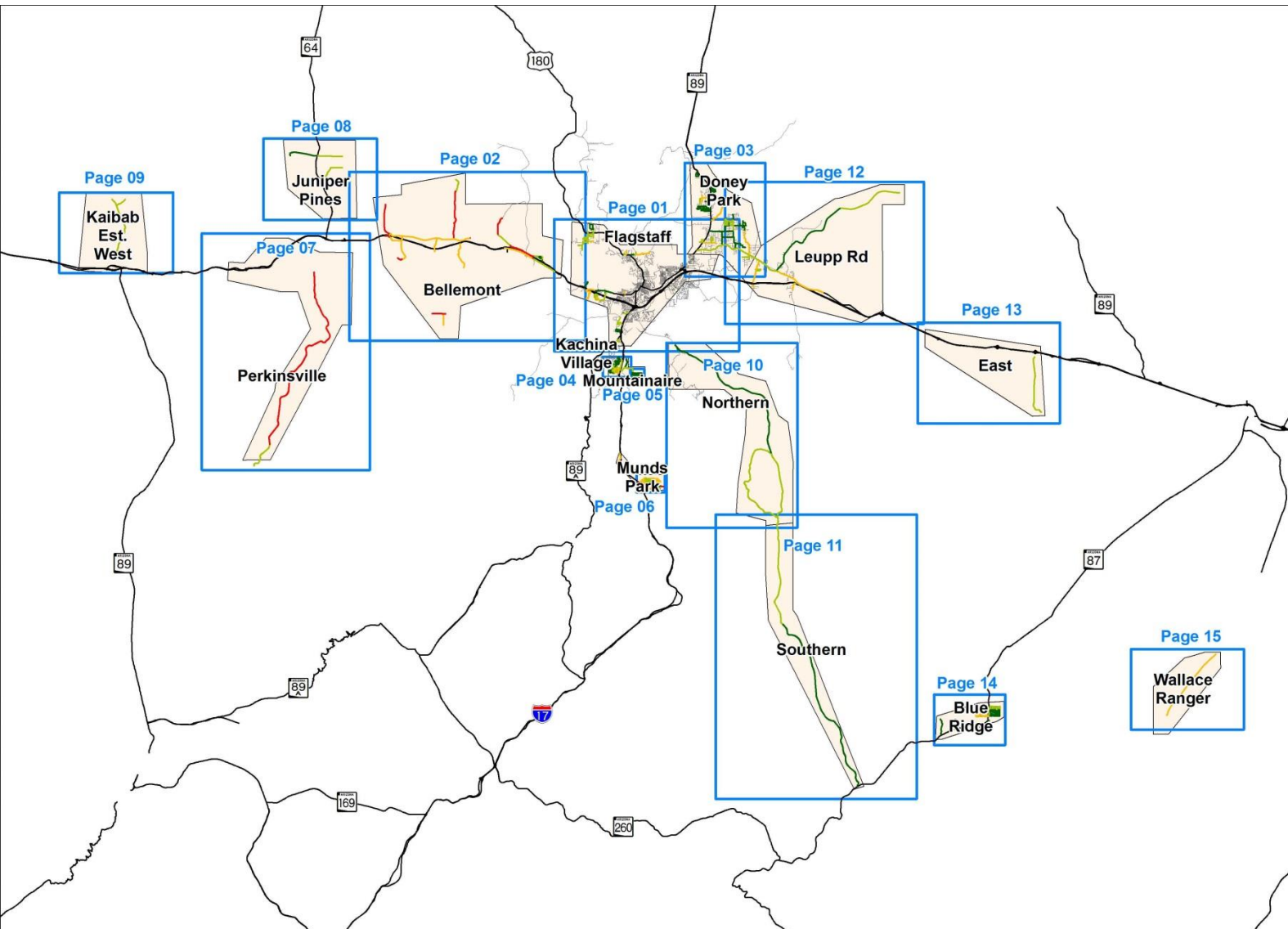


35% of County Roads are in Severe Or Poor Condition



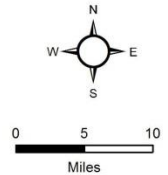


Current Pavement Condition



2014 Pavement Road Condition

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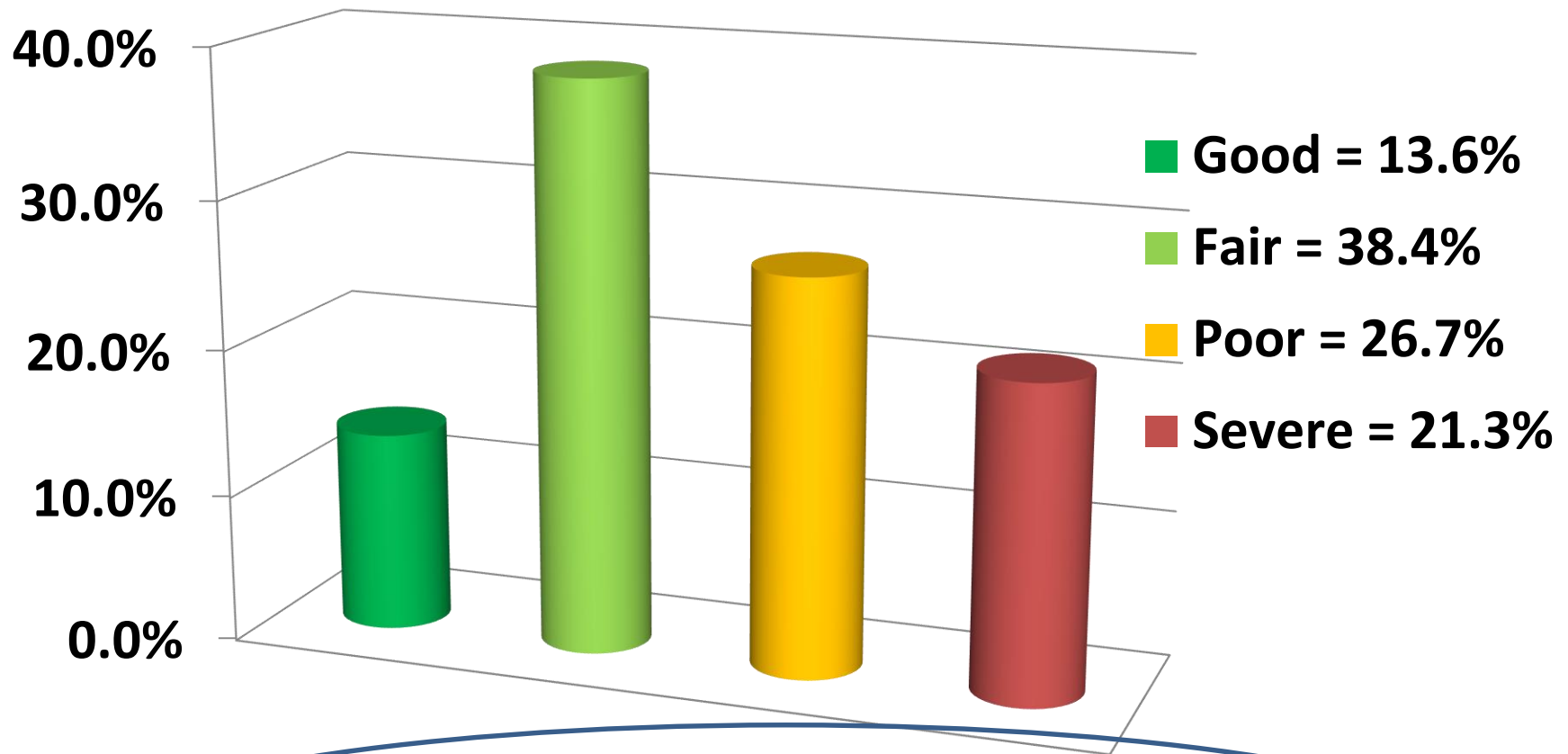
2014 Pavement Condition

- Severe (30 - 0)
- Poor (50 - 31)
- Fair (70 - 51)
- Good (100 - 71)





2019 Predicted Pavement Condition



After 5 Years, 48% of County Roads are in Severe or Poor Condition





2019 Predicted Pavement Condition

Road Rating	2014 Condition	2019 Condition	Percent Difference
Good	31.3%	13.6%	-17.7%
Fair	32.9%	38.4%	5.4%
Poor	25.1%	26.7%	1.6%
Severe	10.7%	21.3%	10.6%





2019 Predicted Pavement Condition

2019 Pavement Road Condition

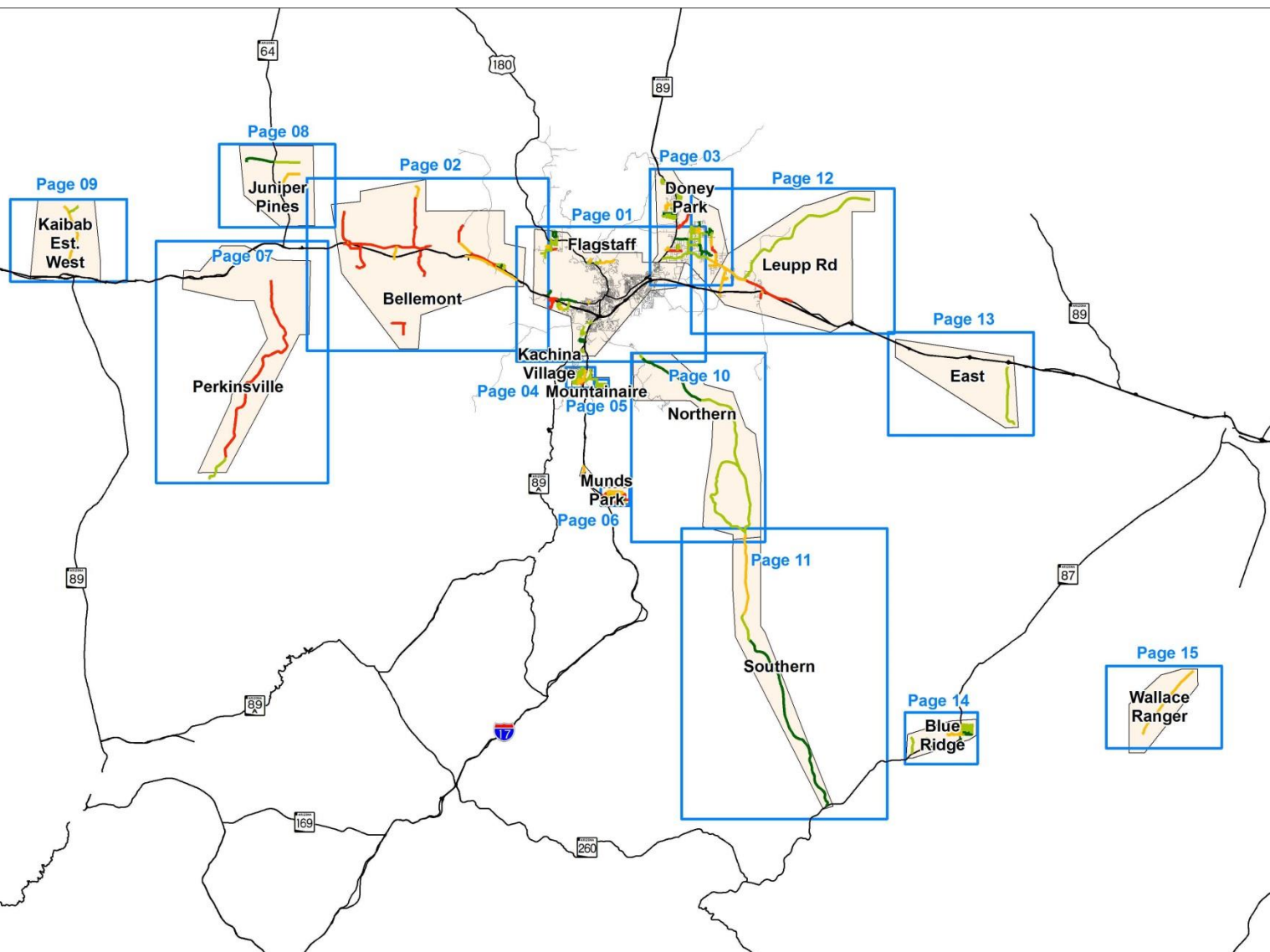
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Miles

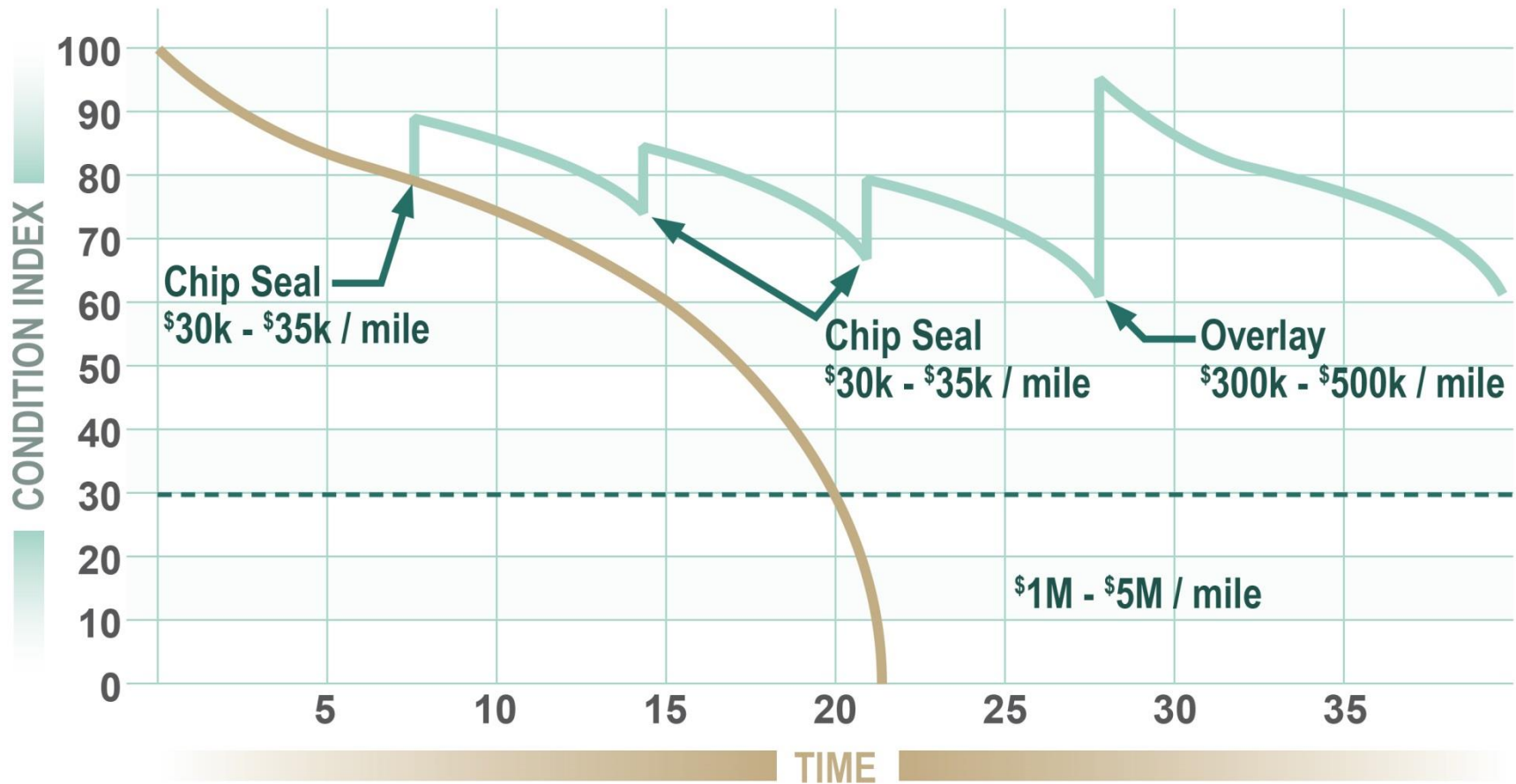
2019 Pavement Condition

- Severe (30 - 0)
- Poor (50 - 31)
- Fair (70 - 51)
- Good (100 - 71)





PAVEMENT DETERIORATION CURVE



Associated Maintenance Costs

	Fog Seal	Chip Seal	Overlay (2")	Mill & Fill	Reconstruction/ Public Safety/ Growth
Cost Per Mile	\$ 3K - \$ 5K	\$ 30K- \$ 35K	\$ 300K- \$ 500K	\$ 600K- \$ 800K	\$1 million - \$5 million
Pavement Life Extension (years)	0-2	3-7	10-20	10-20	15-30
Examples of Strategies:	I-40 near Buffalo Range	Kachina Village	Fourth Street in Flagstaff	South Half of Lake Mary Road (FH3)	Campbell Avenue and Pinewood Boulevard





Associated Maintenance Costs

ROAD CONDITION	LEVEL OF MAINTENANCE REQUIRED	ESTIMATED CONSTRUCTION COSTS PER MILE
Good	Crack Seal, Crack Patch, Fog Seal Coat, Shouldering, Chip Seal	\$3k - \$30k
Fair	Primary - Chip Seal, Occasional Overlay	\$35k - \$100k
Poor	Overlay	\$300k - \$500k
Severe	Mill and Fill - Reconstruction	\$800k - \$1M+





2014 Associated Costs

ROAD CONDITION	MILES	MAINTENANCE COSTS PER MILE	ESTIMATED COSTS
Good	100	± \$10,000	\$ +-1,000,000
Fair	106	± \$50,000	\$ +-5,300,000
Poor	80	± \$400,000	\$ +-32,000,000
Severe	34	± \$850,000	\$ +-28,900,000
Totals	320		\$ +-67,200,000





2019 Associated Costs

ROAD CONDITION	MILES	MAINTENANCE COSTS PER MILE	ESTIMATED COSTS
Good	43	± \$11,040	\$ +-500,000
Fair	123	± \$55,203	\$ +-6,800,000
Poor	86	± \$441,597	\$ +-38,000,000
Severe	68	± \$938,468	\$ +-63,900,000
Totals	320		\$ +-109,200,000

* 2019 Costs Escalated at 2% per year (compounded)



COCONINO
COUNTY

PAVEMENT EVALUATION





▲ Logging Impacts on Pavements

▶ Variables Effecting Impact

- ◆ Number of Trucks (Direction)(Area Specific)
- ◆ Weather (Freeze/Thaw)
- ◆ Existing Pavement Condition
- ◆ Soil Condition (Strength/Make up)
- ◆ Subgrade (Strength)
- ◆ Pavement Structure (Thickness)

▶ Geotechnical Report





▲ Logging Impacts on Pavement

► Lake Mary Road

- ◆ New pavement (Mill / Overlay) 17 miles to the south. (Good Condition)
- ◆ We do not know what is underneath
- ◆ Trucks would shorten the life if maintenance is not applied more frequently
- ◆ If the structural capacity is not met, then there will be an increase in maintenance to meet the overall life of the pavement. (New section from 7 to 5 years, Older sections every 3 or 4 years)





▲ Logging Impacts on Pavement

► Perkinsville Road

- ◆ Current Condition is Poor to Severe
- ◆ Trucks would immediately decrease the serviceability if not returned to dirt/gravel
- ◆ Less than 2 year life without major rehabilitation





Questions/Discussion



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